

**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
OFFICE OF CONSERVATION AND COASTAL LANDS  
Honolulu, Hawaii**

180-Day Exp. Date: May 1, 2007

March 9, 2007

**Board of Land and  
Natural Resources  
State of Hawaii  
Honolulu, Hawaii**

**REGARDING:** Conservation District Use Application (CDUA) OA-3390 for Kalaniana'ole Highway Improvements, Interim Rockfall and Roadway Subsidence Mitigation Located at TMK: (1) 4-1-014:002 & 013

**APPLICANT:** State Department of Transportation-Highways Division (DOT-HWY)

**LANDOWNER:** State of Hawaii

**LOCATION:** Makapuu, Waimanalo, island of Oahu

**USE:** Approximately ( $\approx$ ) 3.4 acres

**SUBZONE:** Limited and Special

**DESCRIPTION OF AREA AND CURRENT USE**

The proposed project site is mauka and makai of an  $\approx$  2,150 feet stretch of Kalaniana'ole Highway located at Makapu'u on the east side of the island of Oahu between the Upper Makapu'u lookout and the opposing driveway entrances to Makapu'u Beach Park and Sea Life Park, respectively. The area makai of the highway is managed by DHHL and under licensee agreement with the City and County of Honolulu. Construction material and equipment shall be sited on the DHHL parcel. The area mauka has leased land to the Oceanic Foundation and Attractions Hawaii. The project area lies within the Limited and Special subzone of the Conservation District (**Exhibit 1 & 2**).

The area is essentially undeveloped except for the Kalaniana'ole Highway Right of Way. Kalaniana'ole Highway was established in the early 1900's and was created by cutting into a hillside comprised of talus deposits along the base of the steep pali. The deposits pose a rockfall hazard as they erode, exposing and releasing rocks and boulders that may

roll onto the highway. A concrete barrier wall extends along the makai side of the right of way.

The project area is about 6.4 acre with an estimated disturbance area of 3.4 acres. The majority of the project is situated on the inland side of the Highway that is comprised of steep slopes that range in elevation of 75 to 410 feet above sea level. The DOT-HWY previously installed rockfall netting over the rocky cliff face above Kalanianaʻole Highway via an emergency proclamation issued by the Governor on October 25, 2002. The project area was not included in this emergency proclamation, as it was not considered an imminent hazard. Nonetheless, the area has been identified as a rockfall hazard area.

A small strip of the project area is situated on the seaward side of the highway at the inland extent of Makapuʻu Beach that consists of road fill below the highway at elevations ranging from 60 to 105 feet. Road subsidence appears to have resulted from decades of use by heavy vehicles. The weight of heavy vehicles Waimanalo-bound pushes the pavement outward. The pavement, in turn pushes against an existing rock retaining wall, of which portions have been damaged. This has caused the roadway to subside under the weight of the vehicles. Other areas of the pavement that are not confined by a retaining wall are cracking under the weight of vehicles due to an unstable sub-grade along the edge of the makai slope (**Exhibits 3-7**).

Rock Outcrop is the predominate soil type. Rock outcrop consists of areas where exposed bedrock covers more than 90% of the surface. Outcrops are comprised of basalt and andesite. According to the applicant, the area is sparsely vegetated. Vegetation consists of scattered koa haole, naupaka and low grasses. Trees include a few milo, ironwood and beach heliotrope. Only two native plant species were found within the project site during the botanical survey: beach morning glory and pauohiika, neither of which is rare or endangered.

Three mammalian species were identified within the survey area: dog, mongoose and cats. It is likely that rats are also in the area. 8 avian species were observed during the survey. Of the 8, 3 are indigenous: the Red-footed Booby, the Great Frigate bird and the Sooty Tern. The remaining 5 species were alien. No candidate, proposed or listed threatened or endangered flora or fauna were observed within the survey area.

Based on previous archaeological research and historical documentation, burials in cavities in the cliff faces and possibly the remains of a trail may be present.

## **PROPOSED USE**

Because major portions of the project are proposed outside of the boundaries of the Highway right of way, the filing of a CDUA is required. According to the information presented, the proposed project consists of rockfall mitigation on the mauka side of Kalanianaʻole Highway, road stabilization on the makai side and other roadway improvements along the Highway (**Exhibit 8**).

### **Mauka Rockfall Mitigation**

The proposed rockfall protection measures include above slope terracing and construction of a 12' high linked steel impact barrier, excavating and removing talus material close to the highway and creating a shallow swale catchment area. The shallow swale will extend a minimum of 15 feet beyond the mauka edge of the pavement. With a maximum depth of 30-inches below the adjacent shoulder edge, the asphalt concrete swale will be constructed along the mauka edge of the pavement to further prevent rocks from rolling onto the highway. 4' tall flexible reflective plastic delineators will be installed between the road and swale for traffic control.

The talus mauka of the swale will be cut to slope more gently, thereby reducing the potential for falling rocks to gain velocity. An approximately 400' long terrace shall be excavated above the cut slope at an elevation of 140' mean sea level. The excavated talus deposits above the terrace will be removed. The terrace may be up to 70' wide. The terrace will provide a catchment area for rocks falling from the steep rocky pali. To prevent rocks from rolling beyond the terrace, a 12' high rockfall impact barrier constructed of linked steel rings and supported by anchored posts and cables shall be installed along the makai edge of the terrace. The 380' long barrier shall be placed approximately six feet from the edge of the terrace to minimize its visibility from the highway (9 & 10).

### **Makai Road Stabilization**

Roadway stabilization includes a concrete barrier wall and slope reconstruction. A new concrete barrier wall extending  $\approx$  950 feet in length shall be constructed along the makai side of the existing rockwall from the Upper Makapu'u Lookout to the upper end of the Lower Makapu'u Lookout. The new wall shall be constructed in two layers. A 6' tall x 1' thick inner wall shall be constructed flush against the makai side of the existing rock retaining wall along its entire length to reinforce the existing wall. The inner wall will be held against the existing wall by a series of anchors, spaced 10 feet apart along its length. Holes for the anchors shall be drilled through the existing wall into the ground beneath the roadway. Each anchor shall extend  $\approx$  30' deep into the ground beneath the highway (Exhibit 11 & 12).

The upper portion of the existing rock wall that extends above the existing pavement shall be removed. A 2" thick layer of new pavement shall be placed over the existing roadway pavement and extend over the top of the truncated existing rockwall and the top of the inner wall. The new paved surface shall increase the width of the existing roadway by 2 feet. The new guardwall shall be crash-tested. It is expected that the wall shall safely deflect errant vehicles back onto the roadway based on current highway design standards. The smooth surface of the inner wall should reduce the potential for any vehicle striking the wall to snag and spin into traffic lanes. The makai face of the outer wall shall be formed and finished to resemble a rock wall to preserve the aesthetic character of hillside above Makapu'u Beach Park. The DOT-HWY is also considering a metal railing atop the new barrier wall to protect bicyclists. The proposed railing would be 10" tall for an overall height (wall & railing) of 42" from the finished pavement. The

slightly taller guard-wall will marginally impact motorists' present view of the coastal scenery.

Slope reconstruction shall include three sections of the Lower Makapu'u Lookout to stabilize the sub-grade and prevent further cracking and subsidence. The areas shall be excavated and unsuitable sub-grade material shall be removed. The areas shall be backfilled, compacted and erosion-control netting shall be installed over the edge of the makai slope prior to resurfacing the roadway. In addition, new guardrails, resurfacing and signage are also proposed. The existing utility poles and overhead lines shall be displaced by the project and shall be replaced with an underground utility system beneath the roadway.

Short-term impacts of the project include air and noise impacts on the surrounding area. Construction activities are anticipated to be done in phases. The project will require periodic nighttime road closures limited to weekdays between 9:30 pm-4:30 am, as well as daytime lane closures with at least one-lane open to traffic in both directions at all times between 8:30 am-3:30 pm. Adequate public notification of road and lane closures shall take place. The proposed rockfall protection measures as well as the previously completed rockfall-netting project are considered interim measures until a permanent rockfall protection plan can be developed and implemented.

## SUMMARY OF COMMENTS

The application was referred to the following agencies for their review and comment: the **State:** Department of Health; Office of Hawaiian Affairs; Office of Environmental Quality Control; Department of Land and Natural Resources Divisions of: Aquatic Resources, Conservation and Resource Enforcement, Engineering, Forestry and Wildlife, Oahu District Land, Historic Preservation, State Parks; the **City and County of Honolulu:** Department of Planning; the Waimanalo and Hawaii Kai Neighborhood Board. In addition, the application and Final Environmental Assessment was also sent to the nearest public library, the Waimanalo Public Library, to make this information readily available to those who may wish to review it.

Comments were received and summarized from the following agencies:

### STATE OF HAWAII

#### DEPARTMENT OF HEALTH (DoH)

Please review our standard comments found on line. Any comments specifically applicable to this project should be adhered to.

#### *Applicant's response*

We acknowledge the project will be subject to all DOH rules found on the website.

OFFICE OF HAWAIIAN AFFAIRS (OHA)

The applicant has properly addressed all issues relating to cultural and natural resource protection and we have no further comments.

DEPARTMENT OF LAND AND NATURAL RESOURCES

*Division of Aquatic Resources (DAR)*

No comments

*Engineering (ENG)*

We confirm that the project site, according to the flood Insurance Rate Map (FIRM), is located in Zone D, areas in which flood hazards are undetermined.

*Division of Forestry and Wildlife (DOFAW)*

No comment

*Historic Preservation (HP)*

We believe no historic properties will be affected by this undertaking because an acceptable archaeological inventory survey documented no historic properties in the area of potential effect.

*Oahu District Land Office (ODLO)*

This area set aside to DOT, Highways by Governor's Executive Order.

**Staff notes:** Executive Order 4177, effective 9/27/06, set aside lands known as (1) 4-1-014:011,013 & Por. of Kalaniana'ole Highway of an area of 65.432 acres for public purposes.

*State Parks (SP)*

The following comments were sent to DOT on the draft EA: A small portion of the new Makapu'u Lookout is owned by DHHL, under license agreement with the Division of State Parks. The lookout is part of the Ka Iwi State Scenic shoreline that is adjacent to the project area and a reference to it should be included in the final EA. Our main concern is the interface between the new Ka Iwi improvements and the subject project.

The recreational resource value of the Ka Iwi State Scenic shoreline is that it offers a linkage with other areas such as Sandy Beach and Makapu'u, extending the opportunities for hiking, beachcombing, and fishing.

The reference to the resource value of Ka Iwi State Scenic Shoreline as a linkage with Sandy Beach and Makapu'u were not included in the final EA.

*Applicant's response*

Unfortunately, your comments were not received and we regret that no specific mention was made to the Ka Iwi State Scenic Shoreline. However scenic views were addressed in the Final EA.

CITY AND COUNTY OF HONOLULU

*Department of Planning and Permitting*

A Major Special Management Area Use Permit (No. 2006/SMA-49) is being processed for this project.

**ANALYSIS**

Following review and acceptance for processing, the Applicant's consultant was notified, by letter dated November 6, 2006, that:

1. The proposed use is an identified land use in the Conservation District, according to § 13-5-22, Hawaii Administrative Rules (HAR), P-6, PUBLIC PURPOSE USES, D-1, "land uses undertaken by the State of Hawaii or the counties to fulfill a mandated governmental function, activity, or service for public benefit and in accordance with public policy and the purpose of the conservation district. Such land uses may include transportation systems, water systems, communications systems, and recreational facilities." Please be advised, however, that this finding does not constitute approval of the proposal;
2. Pursuant to § 13-5-40 of the Hawaii Administrative Rules, a Public Hearing will not be required;
3. In conformance with Chapter 343, Hawaii Revised Statutes (HRS), as amended, and Chapter 11-200, HAR, a finding of no significant impact (FONSI) to the environment was published in the August 23, 2006 Environmental Notice.

**CONSERVATION CRITERIA**

The following discussion evaluates the merits of the proposed land use by applying the criteria established in Section 13-5-30, HAR.

1. *The proposed land use is consistent with the purpose of the Conservation District.*

The objective of the Conservation District is to conserve, protect and preserve the important natural resources of the State through appropriate management and use

to promote their long-term sustainability and the public health, safety, and welfare. Implementation of the proposed project shall act to protect life, property and the highway.

2. *The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur.*

The objective of the Limited subzone is to limit uses where natural conditions suggest constraints on human activities. The objective of the Special subzone is to provide for areas possessing unique developmental qualities which complement the natural resources of the area. A transportation system such as Kalanianaʻole Highway is an identified land use pursuant to § 13-5-22, P-5, Public Purpose Use. By mitigating the potentially hazardous condition of the slope and road subsidence, the proposed action shall improve safe travel on the highway. The project does not propose any change of use of the subject area.

3. *The proposed land use complies with provisions and guidelines contained in Chapter 205, HRS, entitled "Coastal Zone Management," where applicable.*

Staff believes the proposed project complies with Chapter 205, HRS. Resolution 07-001, CD1 granting a Special Management Area Use Permit for development of Kalanianaʻole Highway improvements, was adopted by the Council of the City and County of Honolulu at its meeting on January 24, 2007.

4. *The proposed land use will not cause substantial adverse impacts to existing natural resources within the surrounding area, community, or region.*

Staff believes the proposed land use will not cause substantial adverse impacts to existing natural resources within the surrounding area, community or region. As the project area weathers, it is expected to blend in with the surrounding areas. The mauka terrace shall not be visible from the highway. The slightly taller guard wall may marginally impact motorists' present view of the scenic coast, however, undergrounding utilities shall improve the aesthetics of the area.

5. *The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding area, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

The visual character of the project area may be somewhat less natural and rustic. The proposed land use does not change the existing use of the area.

6. *The existing physical and environmental aspect of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, which ever is applicable.*

Staff believes the natural beauty and open space characteristic of the land will be preserved.

7. *Subdivision of the land will not be utilized to increase the intensity of land uses in the Conservation District.*

There will be no subdivision of land for this proposed project.

8. *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

The implementation of the proposed land use will act to protect both life and property by reducing potential hazards within a transportation corridor. Staff believes the proposed action shall not be materially detrimental to the public health, safety and welfare.

## DISCUSSION

Executive Order 4177, effective 9/27/06, set aside lands known as (1) 4-1-014:011,013 & a portion of Kalanianaʻole Highway of an area of 65.432 acres for public purposes to the Department of Transportation.

The continuous natural and human induced erosion of slopes and rock faces of our islands exposes life and property to potentially hazardous situations. The natural occurrences of erosion and rockfall events are difficult to anticipate, however known hazardous areas should be mitigated. The proposed protective measures as well as the previously completed rockfall-netting project are considered interim measures until a permanent rockfall protection plan can be developed and implemented.

At this particular area of the proposed project, the "transportation system" is a two-lane road going in opposite directions. A rockfall event or erosive subsidence event in this area has the potential to not only be detrimental to life and private property but also may cause hardship to those who are dependent on Kalanianaʻole Highway as a transportation corridor.

## RECOMMENDATION:

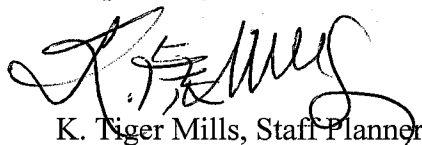
Based on the preceding analysis, Staff recommends that the Board of Land and Natural Resources APPROVE this application for Kalanianaʻole Highway Improvements, Interim Rockfall and Roadway Subsidence Mitigation Located at Makapuʻu on the island of Oahu, TMK: (1) 4-1-014:002 & 013 subject to the following conditions:

1. The applicant shall comply with all applicable statutes, ordinances, rules, regulations, and conditions of the Federal, State, and County governments, and applicable parts of the Hawaii Administrative Rules, Chapter 13-5;

2. The applicant shall comply with all applicable Department of Health administrative rules. Particular attention should be paid to Hawaii Administrative Rules (HAR) Section 11-60.1-33, "Fugitive Dust" and to Chapter 11-46, "Community Noise Control" if applicable;
3. Before proceeding with any work authorized by the Board, the applicant shall submit four (4) copies of the construction and grading plans and specifications to the Chairperson or his authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three (3) of the copies will be returned to the applicant. Plan approval by the Chairperson does not constitute approval required from other agencies;
4. Any work done or construction to be done on the land shall be initiated within one year of the approval of such use, in accordance with construction plans that have been signed by the Chairperson, and, unless otherwise authorized, shall be completed within three (3) years of the approval. The applicant shall notify the Department in writing when construction activity is initiated and when it is completed;
5. All representations relative to mitigation set forth in the accepted environmental assessment or impact statement for the proposed use are incorporated as conditions of the permit;
6. The applicant understands and agrees that this permit does not convey any vested rights or exclusive privilege;
7. In issuing this permit, the Department and Board have relied on the information and data that the applicant has provided in connection with this permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete or inaccurate, this permit may be modified, suspended or revoked, in whole or in part, and/or the Department may, in addition, institute appropriate legal proceedings;
8. All activities connected with the project shall be contained within the project area as identified in the application;
9. The applicant shall plan to minimize the amount of dust generating materials and activities. Material transfer points and on-site vehicular traffic routes shall be centralized. Dusty equipment shall be located in areas of least impact. Dust control measures shall be provided during weekends, after hours and prior to daily start-up of project activities. Dust from debris being hauled away from the project site shall be controlled. Dust control of cleared areas will be initiated promptly;
10. Where any polluted run-off, interference, nuisance, or harm may be caused, or hazard established by the use, the applicant shall be required to take measures to

- minimize or eliminate the polluted run-off, interference, nuisance, harm, or hazard;
11. During construction, appropriate mitigation measures shall be implemented to minimize impacts to off-site roadways, utilities, and public facilities;
  12. The applicant shall implement mitigation measures to prevent construction materials, petroleum products, and other potential contaminants from falling, blowing, or leaching into the aquatic environment;
  13. Potable water supply and sanitation facilities shall have the approval of the appropriate agencies;
  14. Should historic remains such as artifacts, burials or concentration of charcoal be encountered during construction activities, work shall cease immediately in the vicinity of the find, and the find shall be protected from further damage. The contractor shall immediately contact HPD (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;
  15. The applicant acknowledges that the approved work shall not hamper, impede or otherwise limit the exercise of traditional, customary or religious practices in the immediate area, to the extent such practices are provided for by the Constitution of the State of Hawaii, and by Hawaii statutory and case law;
  16. Other terms and conditions as may be prescribed by the Chairperson; and
  17. Failure to comply with any of these conditions shall render this Conservation District Use Permit null and void.

Respectfully submitted,

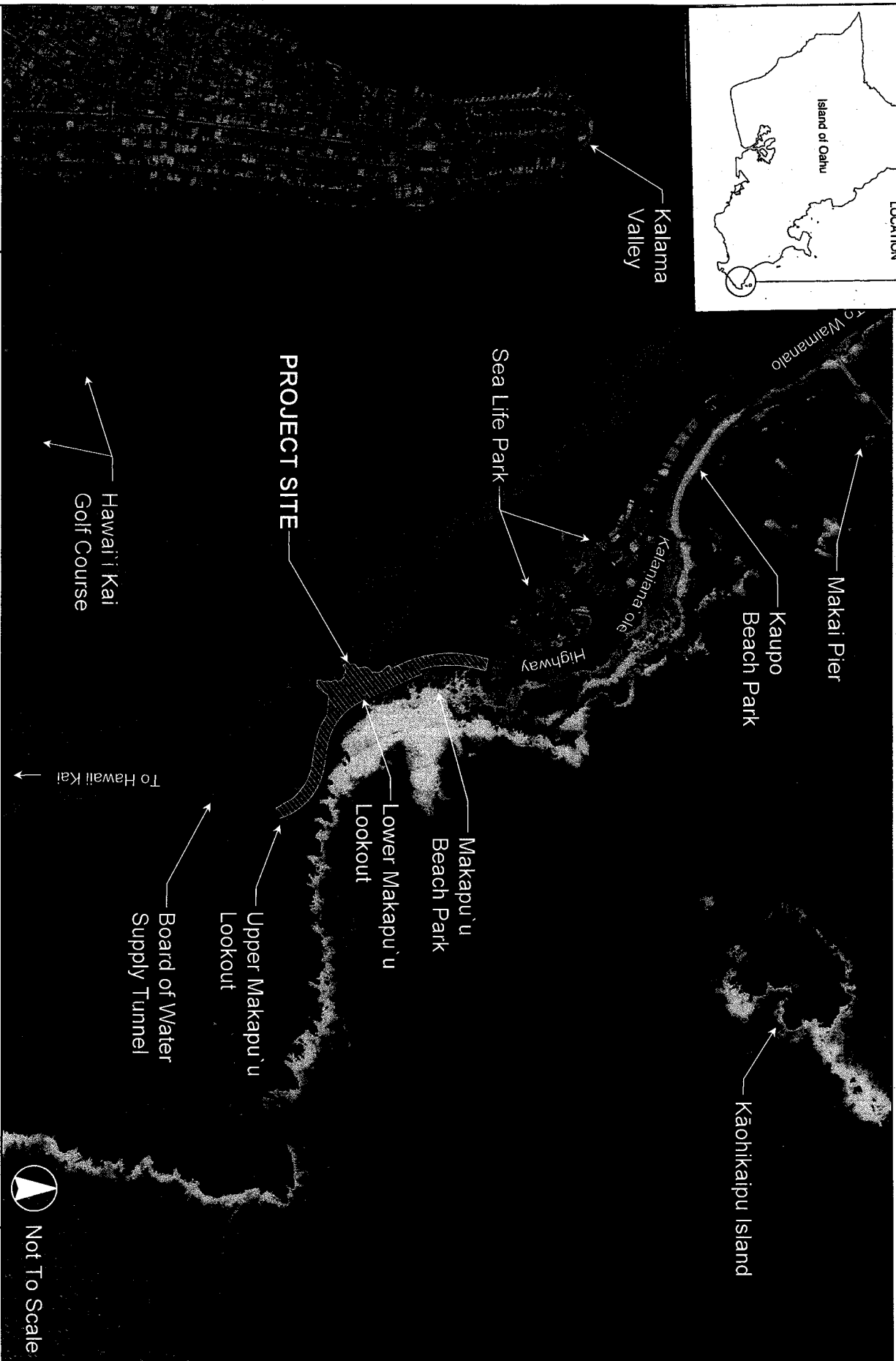
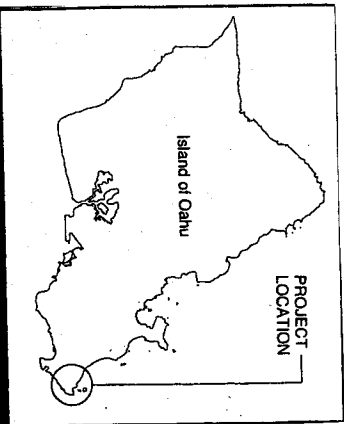


K. Tiger Mills, Staff Planner  
Office of Conservation and Coastal Lands


Approved for submittal



PETER T. YOUNG, Chairperson  
Board of Land and Natural Resources

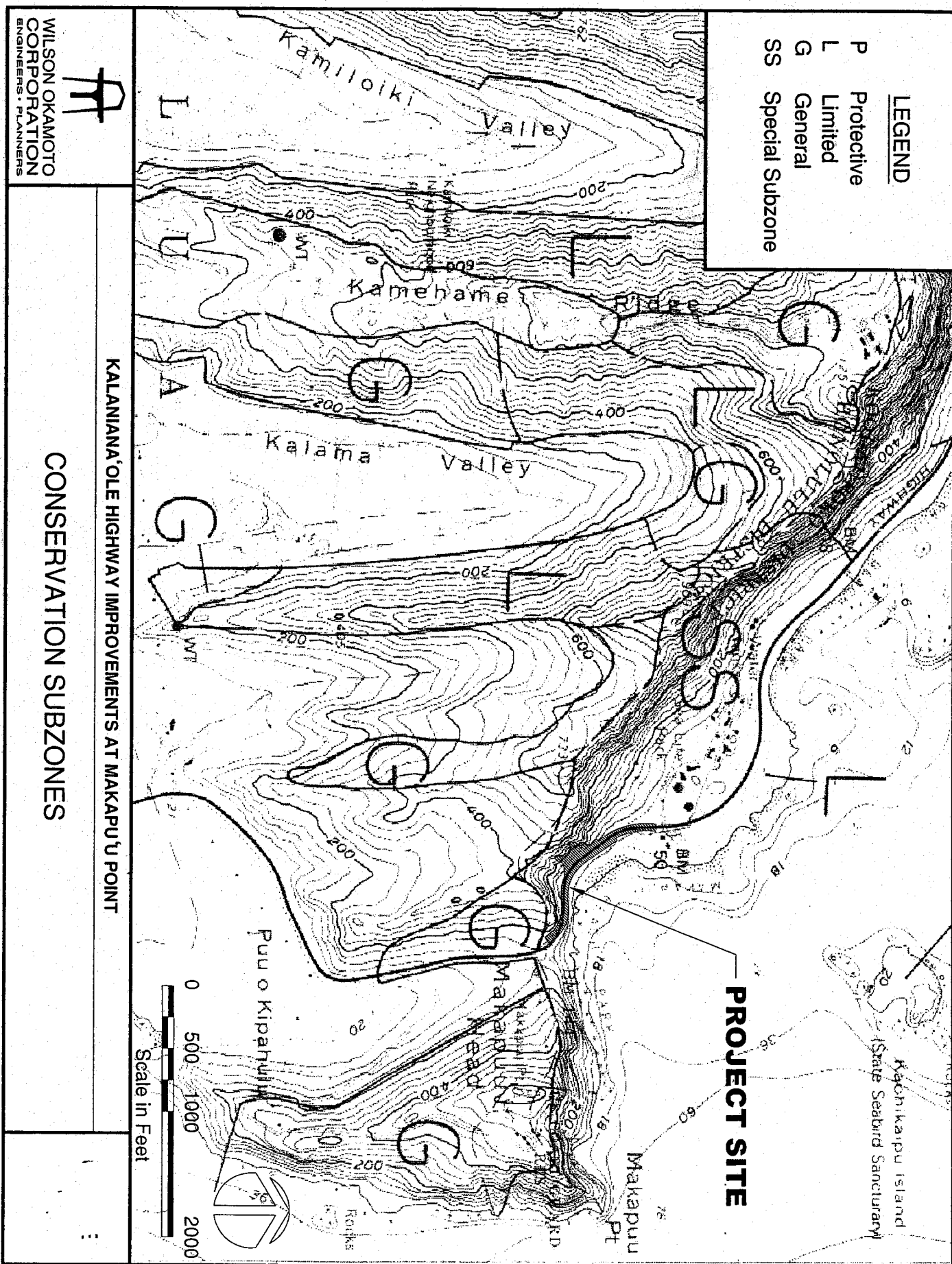


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CORPORATION  
ENGINEERS - PLANNERS

KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

SURROUNDING USES MAP





Photograph Description

Photograph 1 and 2:	Completed Rockfall Netting Project
Photograph 3 and 4:	Road Subsidence
Photograph 5:	Rockfall Protection Area
Photograph 6 and 7:	Talus Material

Not shown

Photograph 8 and 9:	Papakolea Rockfall Impact Barrier
Photograph 10 and 11:	Pu'u Kilo I'a Location



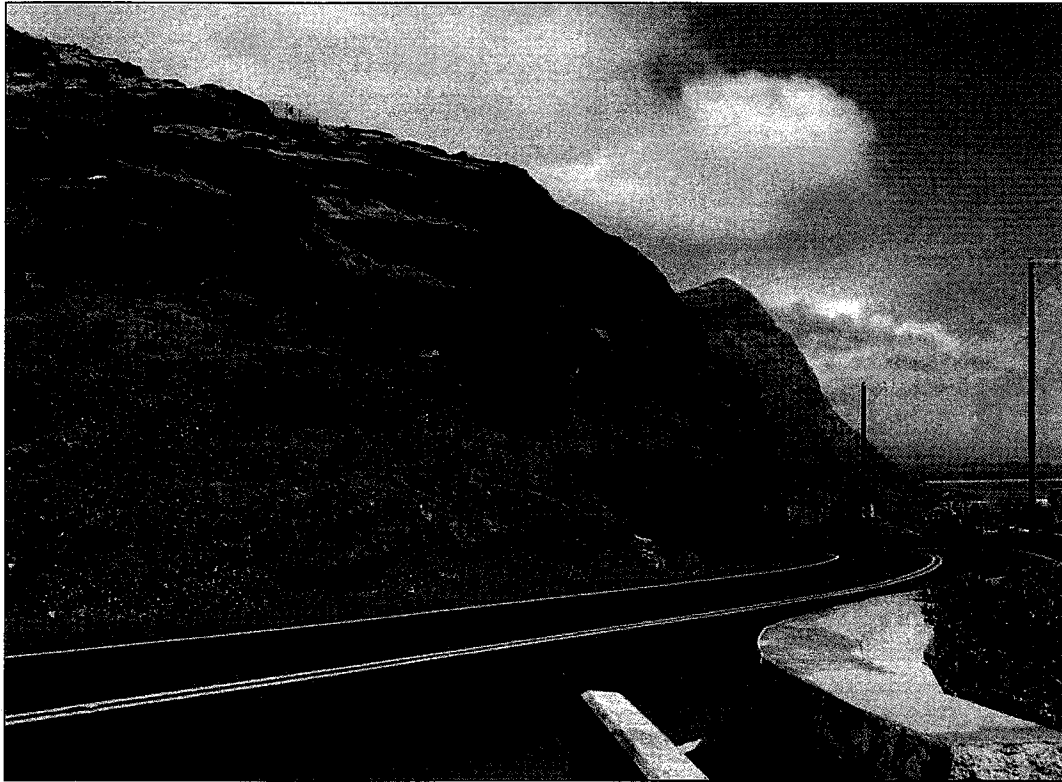
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**KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT**

**PHOTOGRAPH KEY**



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KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

COMPLETED ROCKFALL NETTING PROJECT

Photos  
1 & 2

EXHIBIT 4



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KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

ROAD SUBSIDENCE

Photos  
3 & 4

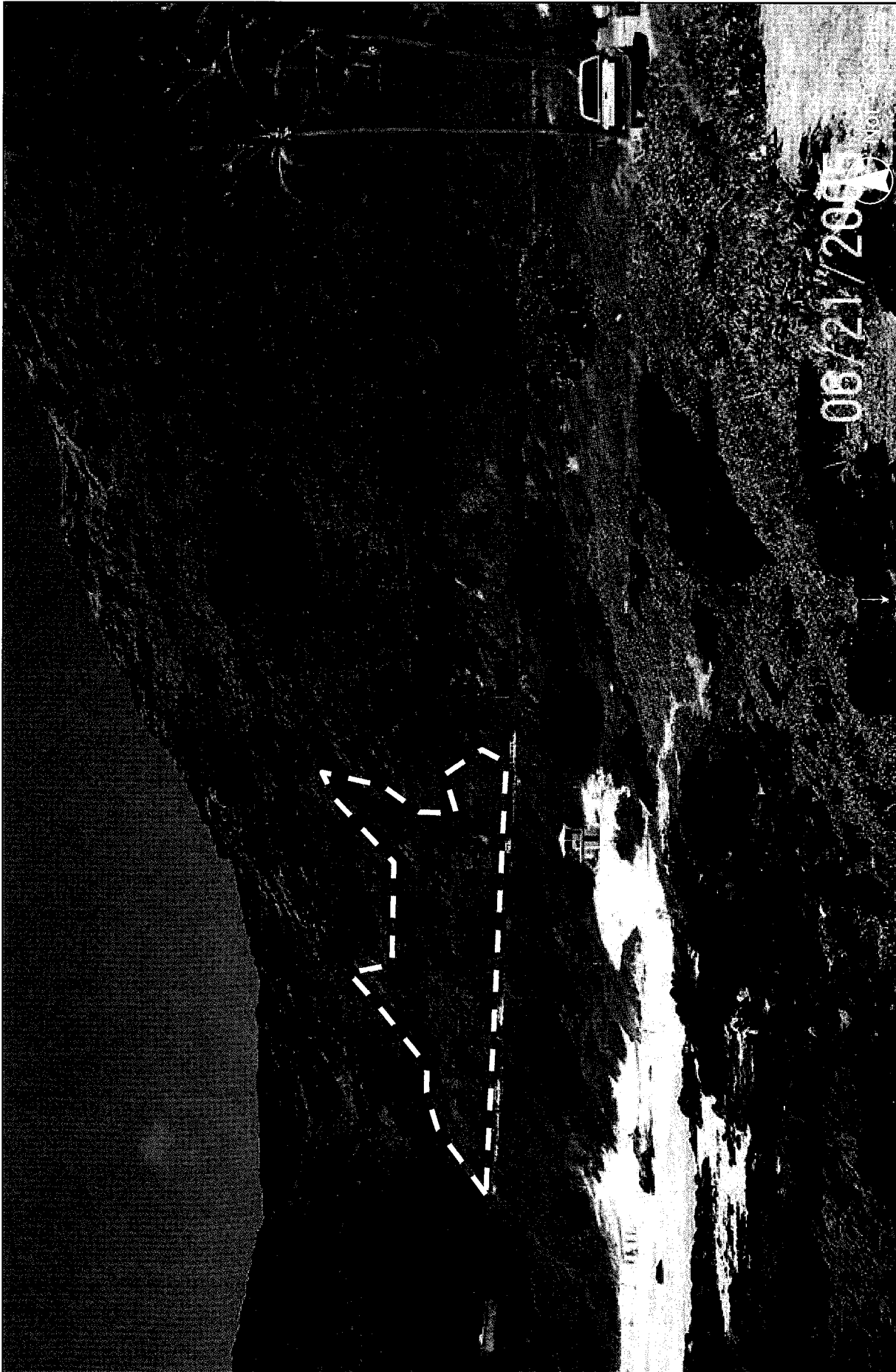
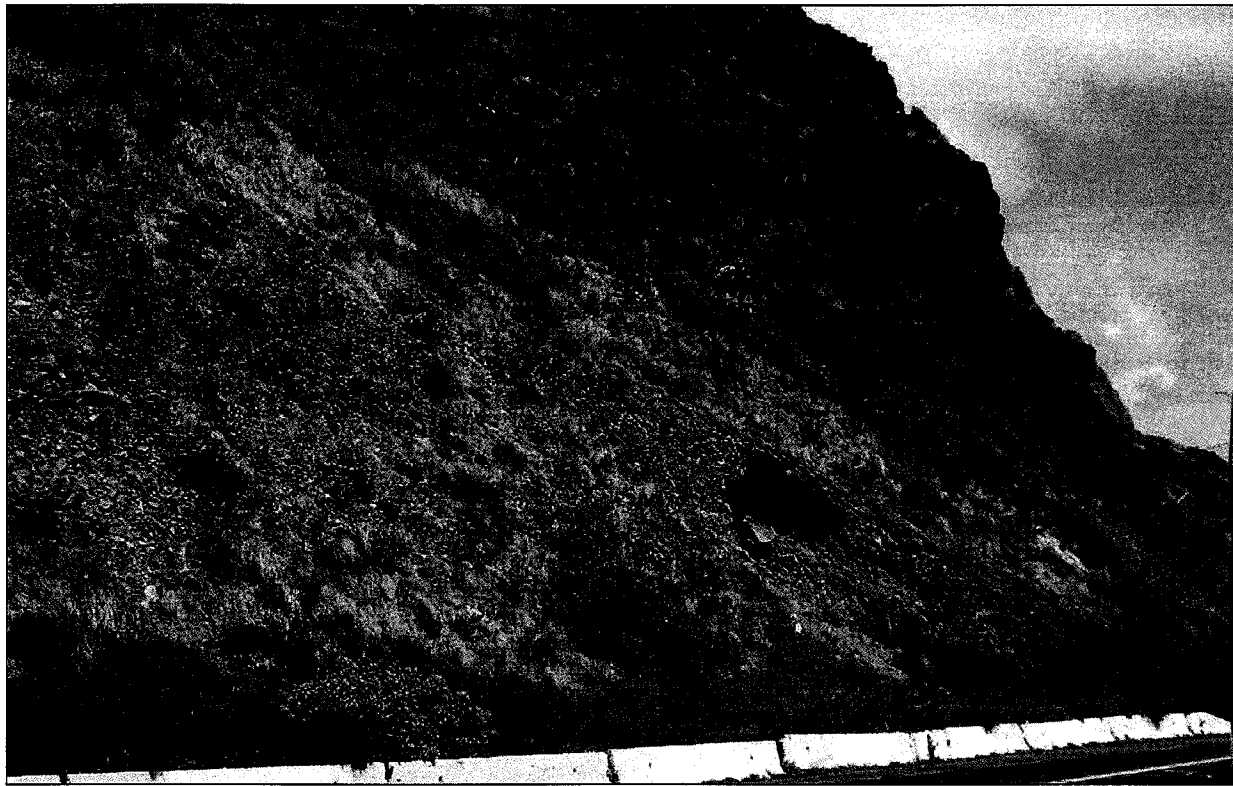


EXHIBIT 6

 WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT	
	ROCKFALL PROTECTION AREA	PHOTO 5



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CORPORATION  
ENGINEERS - PLANNERS

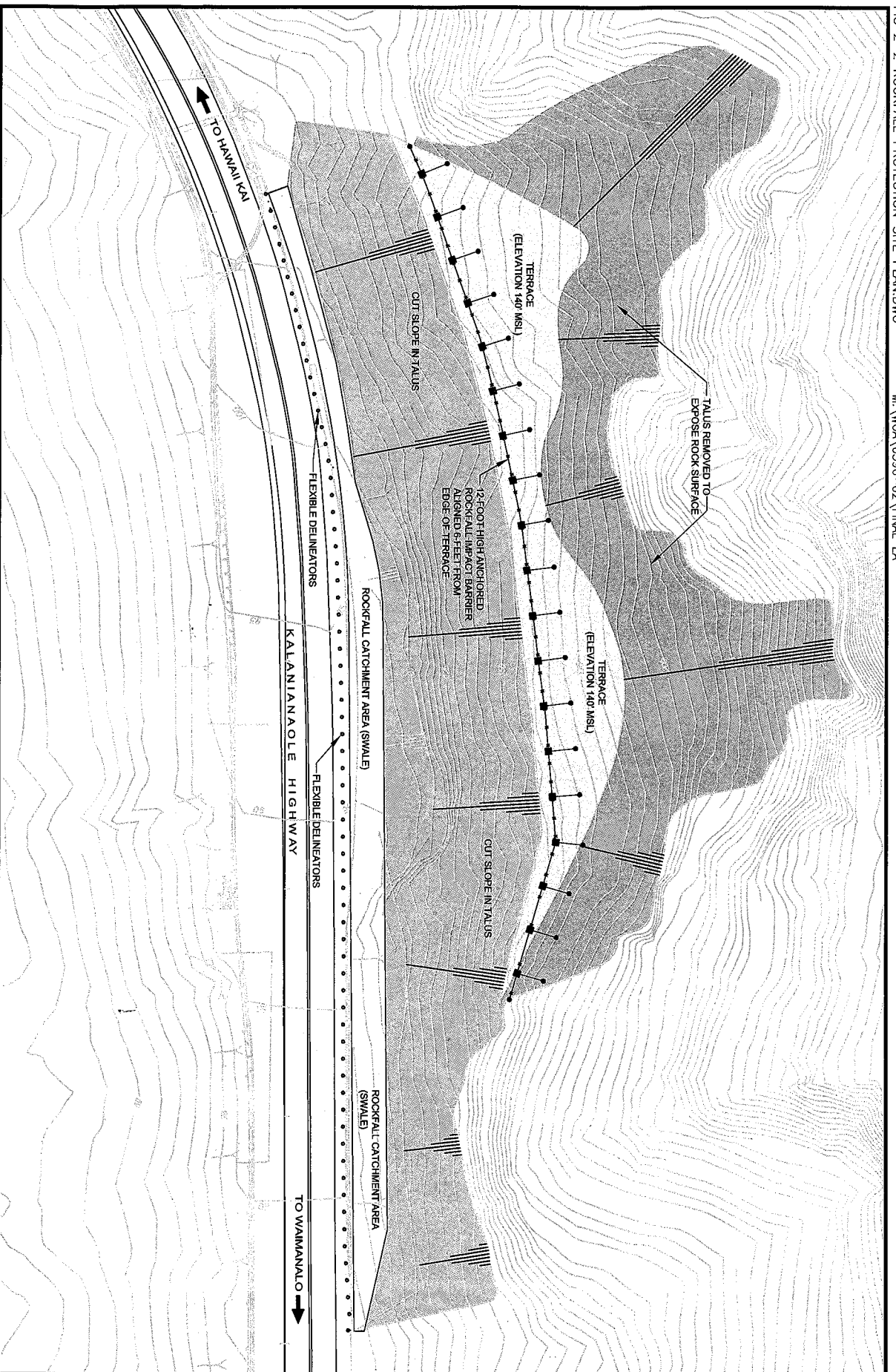
KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

TALUS MATERIAL

Photos  
6 & 7

EXHIBIT 7

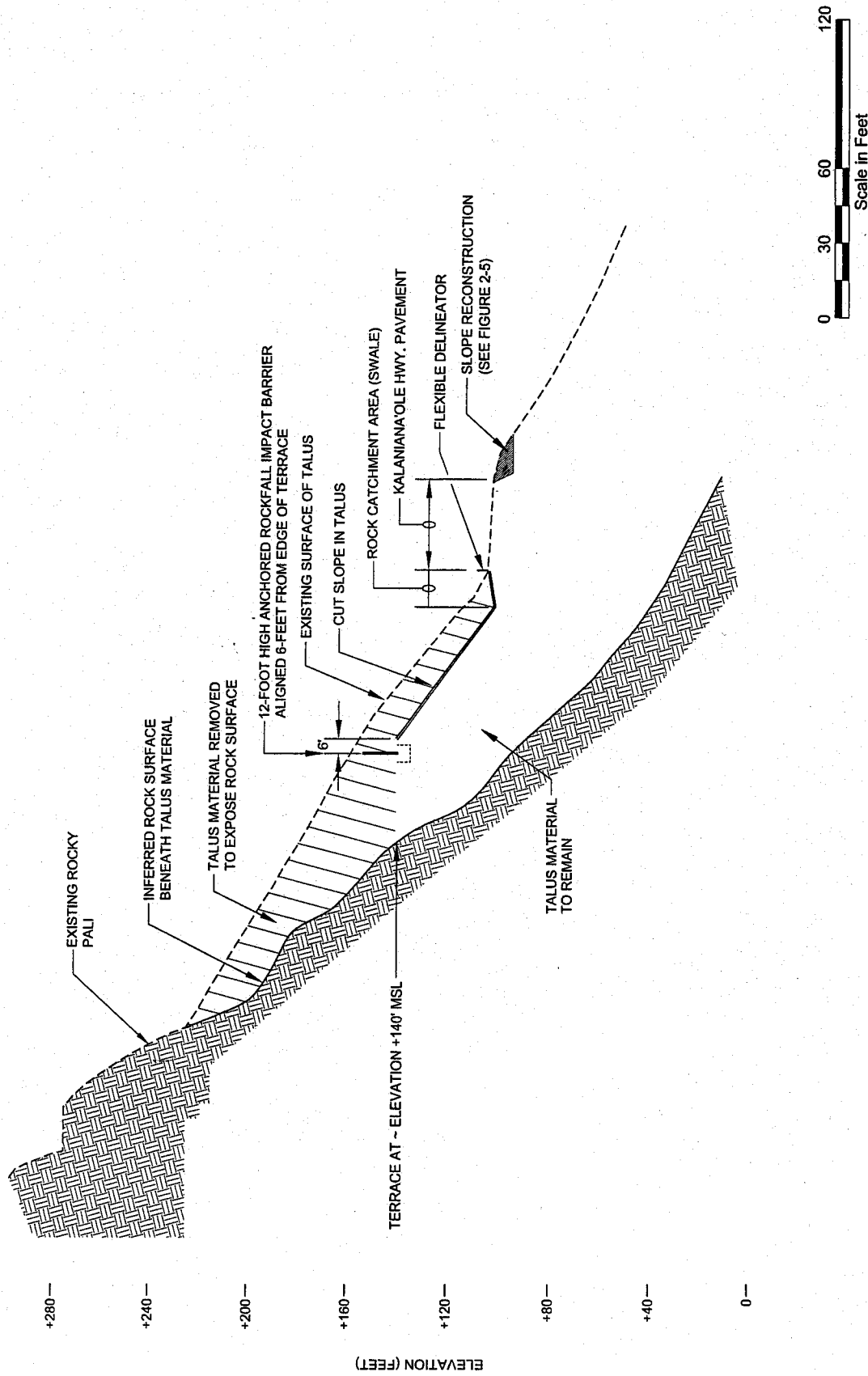




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KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

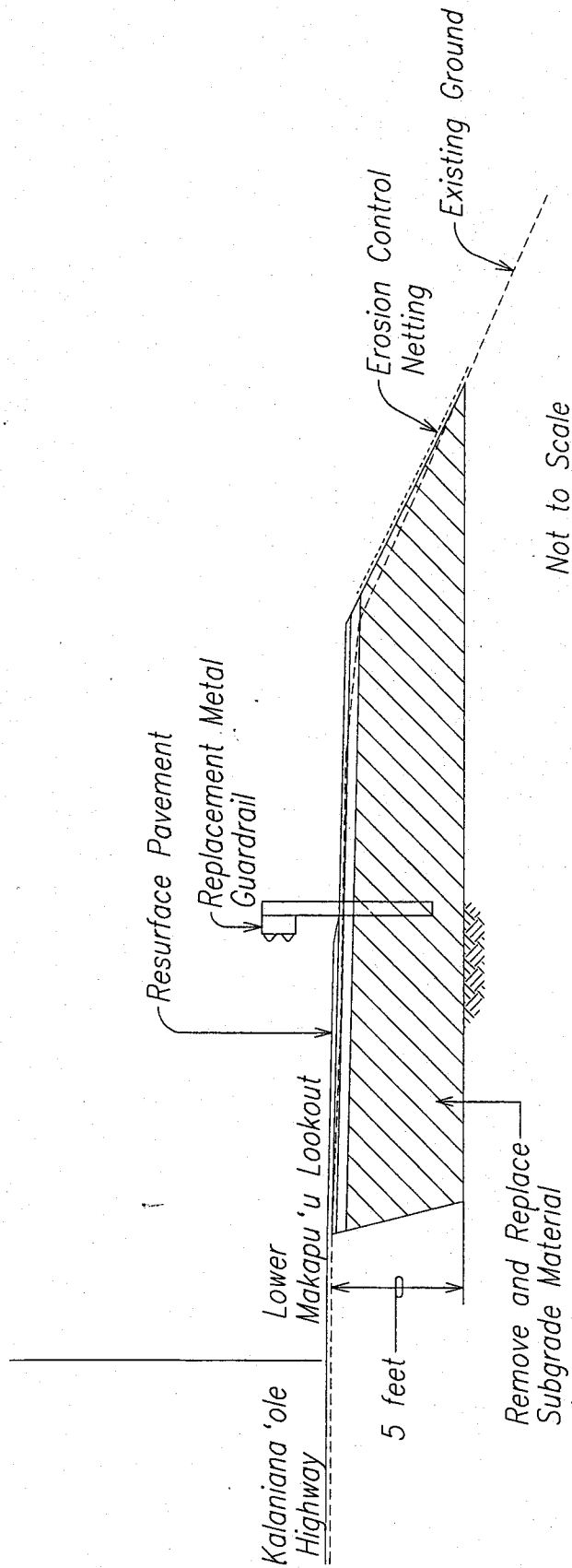
ROCKFALL PROTECTION SITE PLAN



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KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

## ROCKFALL MITIGATION TYPICAL SECTION



KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

## SLOPE RECONSTRUCTION



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## KALANIANA'OLE HIGHWAY IMPROVEMENTS AT MAKAPU'U POINT

# CONCRETE BARRIER WALL